NOV 10 1951

# The Citrus Industry

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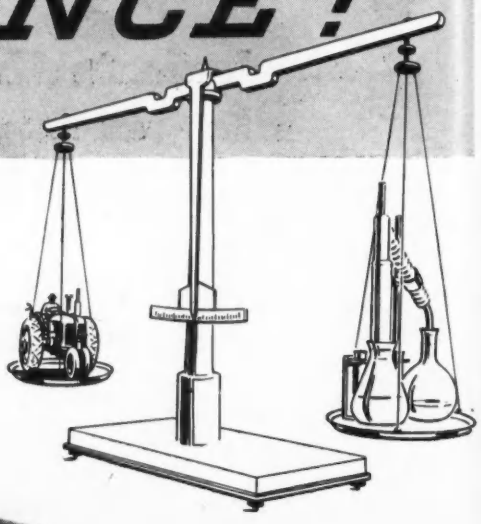
Pictured Above
IRRIGATION IN A FLORIDA
CITRUS GROVE

This Month

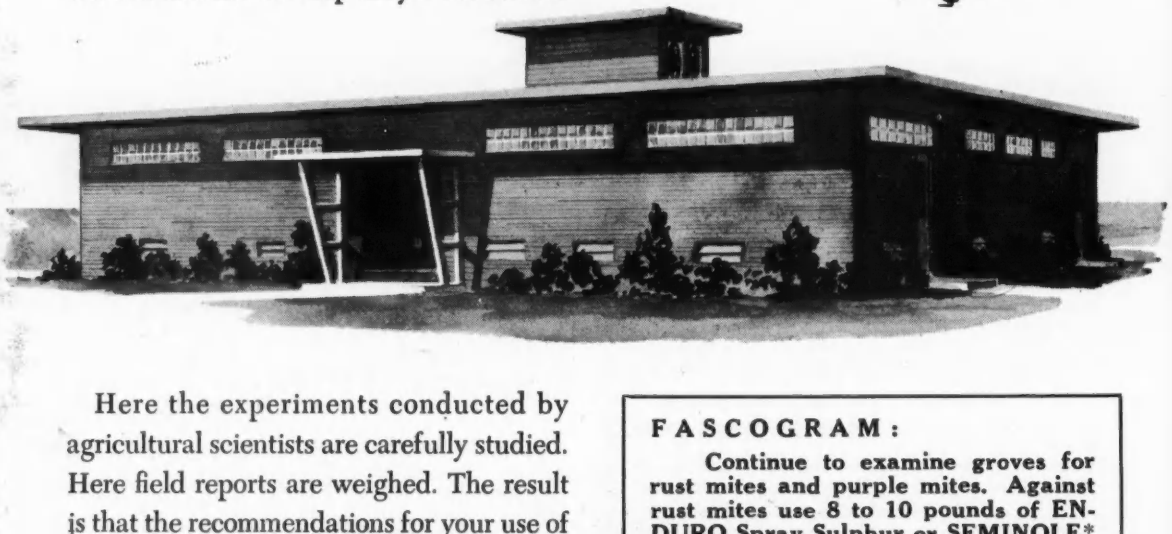

- Citrus Insect Control For November 1951
- Trends In The Supply and Demand of Citrus
- Robinson Stresses Need of Greater Advertising
- Can Florida Growers Afford Uncertified Nursery Stock?
- Annual Thermometer Testing
- Some Facts About Irrigation
- High Protein Citrus Pulps
- Mulching Experiments on Young Citrus Trees


Vol. 32, No. 11 Bartow, Florida November, 1951

# IN BALANCE!



This new laboratory, which houses the research activities and manufacturing control of both the Wilson & Toomer Fertilizer Company and the Florida Agricultural Supply Company, has a special significance for you. It helps to keep what we learn from your practical experience in balance with the new theories developed by the scientists.



Here the experiments conducted by agricultural scientists are carefully studied. Here field reports are weighed. The result is that the recommendations for your use of IDEAL Fertilizers and FASCO Pesticides are based on the most up-to-date thinking available. This great new laboratory is just another reason why IDEAL Fertilizers and FASCO Pesticides are

**FASCOGRAM:**

**Continue to examine groves for rust mites and purple mites. Against rust mites use 8 to 10 pounds of ENDURO Spray Sulphur or SEMINOLE* Wettable Sulphur per 100 gallons. For purple mites add 2/3 lb. of DN Dry Mix No. 1 or 1¼ lb. DN 111 if temperatures stay below 88°F. In warmer periods use Neotran at 1½ to 2 lbs.**

* Reg. U. S. Patent Office

*Your Profit Combination for Crop Feeding and Protection*

IDEAL FASCO

# WILSON & TOOMER
FERTILIZER COMPANY

*and Divisions*

## FLORIDA AGRICULTURAL SUPPLY COMPANY

**Peninsular Fertilizer Works — Tampa**

GENERAL OFFICES • JACKSONVILLE, FLORIDA

# Citrus Insect Control For November 1951

R. M. PRATT AND W. L. THOMPSON,* FLORIDA CITRUS EXPERIMENT STATION, LAKE ALFRED

Red scale continues to be a problem in many groves as a result of the hatch which had its peak in mid-September. A new hatch started during the second week in October, so this scale may be expected to continue to be troublesome.

Purple scale increased only slightly during the month ending the second week in October and has not been particularly troublesome but infestations are expected to increase further during October and spraying will be required in some groves.

Purple mites are at a very low level at this time. The average infestation has been increased slightly, and a substantial increase may occur during November and December if we have cool, dry weather.

Rust mites have been abundant enough to require control in many groves during September and October and the average infestation is still increasing. Groves should be checked closely and care should be taken to keep rust mite at a low level during the fall and winter months.

**Spray Programs**

Purple and red scale should be controlled where live scales are numerous enough to attract attention. Fruit drop is noticeable where purple scale has not been controlled, and trees infested with either species of scale are more susceptible to dry or cold weather than are scale-free trees. Parathion at 1 2/3 pounds plus wettable sulfur at 6 to 8 pounds per 100 gallons is recommended at this time of the year, with DN included if purple mites are present. Parathion will be most effective if applied during calm weather. An oil emulsion should not be used because it is likely to cause more leaf drop and dead wood than parathion and the effect of the oil on the trees is also likely to cause dead wood if freezing temperatures should occur during the winter.

Rust mite infestations should be kept at a low level with sulfur sprays or dusts to prevent russeting of the fruit and "greasy spot" on the leaves. During the fall and winter months heavy rust mite infestations on the leaves and green twigs may be a factor in causing a heavy leaf drop during periods of windy and dry weather, even in the absence of greasy spot.

The purple mite population is at a low edd now which is a good time to apply DN to keep the infestations at a low level. If it is necessary to apply sulfur for rust mite control it is a good practice to include DN in the spray or dust mixture if any mites or unhatched eggs are found in the foliage. The period of control is much longer where the miticide is applied where there is a very light infestation, as compared to the period of control where the application is delayed until a heavy infestation develops. By including the miticide with the sulfur an extra operation for purple mite control may be averted in December. Sprays are more efficient than dust applications, but a DN-sulfur dust is practical if a thorough application is made on two sides of the trees while there is a light infestation of mites.

For more specific information consult the Florida Citrus Experiment Station at Lake Alfred or Fort Pierce.

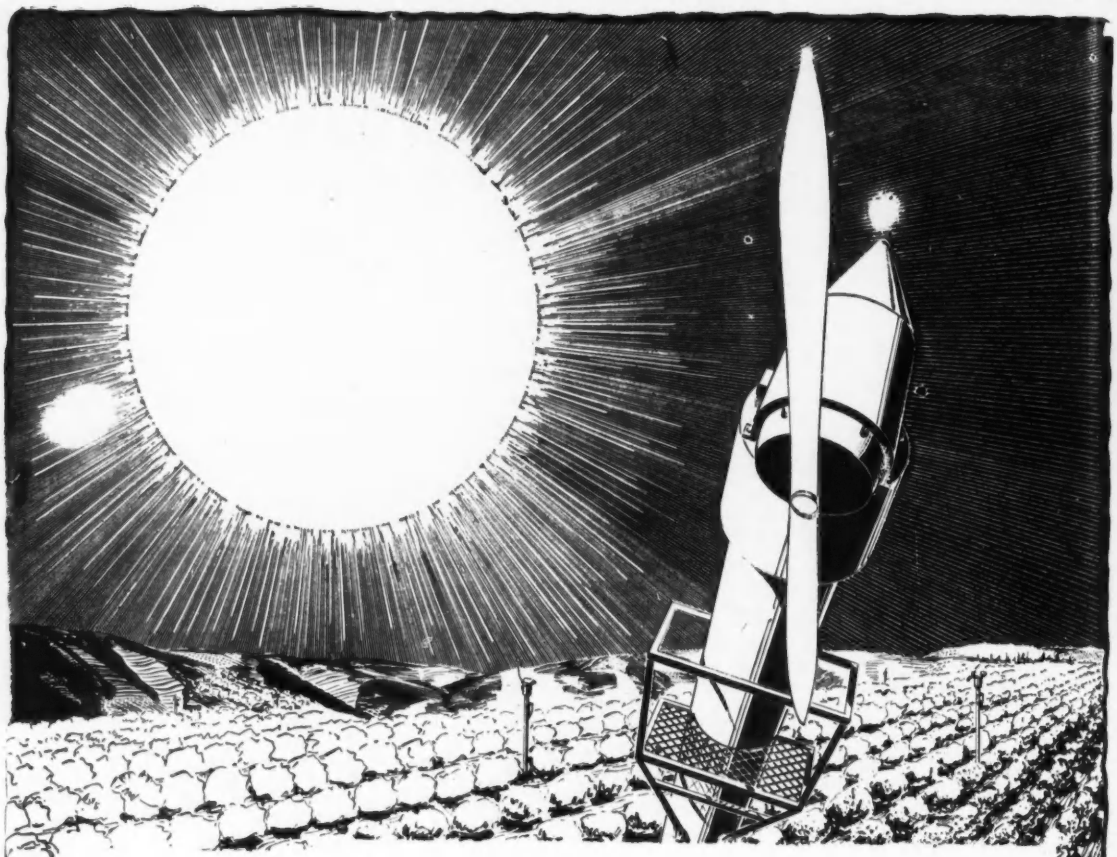
*Written October 22, 1951. Reports of surveys by Harold Holtsberg, Cocoa; J. W. Davis, Tavares; K. G. Townsend, Tampa; J. B. Weeks, Avon Park; and E. D. Harris, Jr., Lake Alfred.

## DESERT GRAPEFRUIT ADMINISTRATIVE COMMITTEE NAMED:

The U. S. Department of Agriculture has named members and alternates of the Administrative Committee to serve under the amended marketing agreement and order program for California-Arizona desert grapefruit, during the fiscal period beginning August 1, 1951.

Members and their alternates are: Leland J. Yost, Thermal, Calif., and Don H. Mitchell, Indio, Calif.; Ralph Sechrest, Redland, Calif., and Max M. Zimmerer, Mecca, Calif.; J. E. Harshman, and Louis A. Clarke, Brawley, Calif.; Joe Russo, and Earl M. Snee, Brawley, Calif.; Arthur Burgher, and Edward Tway, Phoenix, Ariz.; Harry E. Ellis, and Wesley A. Davis, Yuma, Ariz.; Carl E. Hover, and Charles E. Beville, Mesa, Ariz.; Jack Powell, and Dean H. Thayer, Mesa, Ariz.

The Administrative Committee, acting as the official administrative body under the marketing program, makes recommendations, when it is deemed advisable, as to the grades and sizes of desert grapefruit that may be shipped in interstate commerce



Frostmaster Sales Company, Inc., is very proud to announce that Lake Garfield Nurseries Company have chosen two of our wind machines for the first wind machine frost protection experiment in your state. These units are 25 H.P. electrics and are installed on the nursery plot known as the Friedman Block,, located 12 miles S. E., of Bartow. Frostmaster is justly proud of the popularity and proven dependability of their wind machines in California and feel that they will do an outstanding frost protection job for Florida Growers. We invite your observation of their operation during the coming Winter season.

**FROSTMASTER**
***WIND MACHINES***
MANUFACTURED BY ROBT. J. ZIEVERS INC.
2282 LA VERNE ROAD • LA VERNE • CALIFORNIA

The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

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# Trends In The Supply And Demand of Citrus

— By —
H. G. HAMILTON
AT CITRUS GROWERS INSTITUTE,
CAMP McQUARRIE

It appears that wars, pest and weather halt the increasing production of citrus only temporarily. Civil war in Spain reduced, for a time, the production of citrus in that country. World War II reduced the production of citrus in Palestine and Italy. Pest reduced for a time the production of citrus in South America. Weather reduced the production of citrus in California and Texas. However, in most important citrus areas of the world, except Texas, production is back to normal and in most areas much above pre-war levels.

**Oranges**

Because of our rapid increase in population and changes in per capita purchasing power supply should be dealt with both in the aggregate and on a per capita basis. United States production of oranges in the 1950-51 season was approximately six times the production of the 1910-11 season. However, because of the increase in population per capita supply of oranges was only three and one-half times as great in the 1950-51 season as the 1910-11 season. Production has increased for the past 40 years at the rate of 2,500,000 boxes per year. During the last 20 years production increase has averaged 3,500,000 boxes per year as compared to 1,700,000 boxes for the period 1910 to 1930 inclusive. Per capita production has increased from 20 pounds in 1910 to 74 pounds in 1946.

Of particular importance is the form that oranges have been consumed in since 1930. It will be observed that consumption in fresh form reached a peak in the 1943-44 season with 84,000,000 boxes or approximately 45 pounds per capita. In the 1949-50 season oranges marketed in fresh form amounted to 53,000,000 boxes or about 32 pounds per capita. The canning of single strength orange juice from 1930 to 1944 while important was not sufficient to take care of the increase in production. The trend in fresh orange marketing was definitely upward until 1945-46 when the processing of frozen concentrate got well under way. In 1949-50 the marketing of oranges in fresh form was less than for any year since 1940 and per capita marketing in fresh form was less than for any of the past 20 seasons. How much further the processed product will displace the fresh is anybody's guess.

The pattern of supply for Florida oranges is similar to that of the United States, except that the increase in production has been at a much faster rate. In 1920 Florida produced about 9,000,000 boxes and in 1950 about 67,000,000 boxes. In a period of 30 years Florida orange production increased by 7½-fold. The average increase in production for the 30 year period was 2,000,000 boxes per year. During the first 15 years (1920 to 1935) production doubled and increased on the average of 500,000 boxes per year. In the last 15 years Florida orange production quadrupled and the average increase per year was 3½ million boxes. United States per capita supply of Florida oranges was only 7 pounds in the 1920-21 season but was 40 pounds in the 1950-51 season.

The trend toward processing has been more pronounced in Florida than California. For the 4-year period 1947-48 to 1950-51 Florida marketed in fresh form 5 million boxes per year less than for the 4-season period 1943-44 to 1946-47. But for the same periods 18 millions boxes per year more were marketed in processed form in the 4-year period 1947-48 to 1950-51 than in the 4-year period 1943-44 to 1946-47. This past season per capita supply of fresh oranges was

about 14 pounds and for processed oranges (fresh weight basis) about 26 pounds.

**Grapefruit**

Grapefruit production in the United States was only 1¼ million boxes in 1910 and it was not until the 1928-29 season that production exceeded 10,000,000 boxes. Production increased to about 20 million boxes by 1935-36. From the 1936-37 season, which was the first season that Texas had more than 3,000,000 boxes, to the 1947-48 season the production of grapefruit doubled. During this 12-year period grapefruit increased by 2½ million boxes per year. The United States per capita supply of grapefruit was approximately 35 pounds in the 1946-47 season and only 18 pounds in the 1935-36 season and less than 7 pounds in the 1925-26 season. During the 12-year period 1935 to 1936 per capita marketing of fresh grapefruit averaged about 10 pounds. Per capita supply of grapefruit marketed in fresh form has never exceeded 13 pounds. Since 1934 the increase in production has gone into cans.

The Florida grapefruit production picture is given in figures 7 and 8. The significant thing about Florida grapefruit production is that the amount marketed in fresh form changed but little from the 1931-32 season to the 1948-49 season. Because of the Texas freezes Florida increased the amount of grapefruit marketed in fresh form from 9 million boxes in the 1947-48 season to about 14 million boxes in the 1950-51 season. This was an all time high. This season (1951-52) Florida may market in fresh form 17,000,000 boxes. The per capita supply of Florida fresh grapefruit has fluctuated from 4 to 8 pounds over the last 30 years and has averaged less than 6 pounds. It is probable, because of the Texas freeze, that marketing fresh grapefruit over the next few years will be from 7 to 8 pounds per capita.

**Demand**

Demand for citrus in the short run is determined by many factors. Level of income, production of competing products, level of income taxes, amount of purchases of durable goods, advertising and merchandising programs, and extent that new uses for citrus are found. In the long run—factors affecting the consumption of citrus fruit are United States and Canadian population, per capita income, and new uses that are developed.

Population growth of the United States varies greatly from period to period. From 1910 to 1919 United States population increased by 12,000,000 or a little over 1,200,000 per year; from 1920 to 1929 the increase was 15,000,000 or about 1,500,000 per year; from 1930 to 1939 the increase was 7,500,000 or about 750,000 per year; from 1940 to 1949 the increase was 17,500,000 or 1,750,000 per year. At the present time population is increasing at the rate of 2,250,000 per year. From 1930 to 1939, at the rate of the per capita consumption of oranges which existed for this period, it required an increase of only 330,000 boxes of oranges to take care of the increase in population. In the decade 1940 to 1949 it required 1,225,000 boxes of oranges to take care of the increase in population. At the present rate of increase in population it will require an increase of 1,750,000 boxes of oranges per year to take care of the increase in population.

Assuming no change in per capita income it will require approximately 8,000,000 boxes more oranges in the 1954-55 season than was produced in the 1950-51 season to give people as many oranges then as they had this past year. It will require 3,750,000 boxes more grapefruit to give them as much grapefruit as they had in 1950-51.

The great variation in the price of oranges from year to year is caused more by the changes in per capita real income (constant dollars) than the year to year changes in population. Variation in per capita income is caused more by the number of people employed than the wage rate paid to those employed. In 1932, 39 million people were employed, population was 119 million. In 1944, 66 million people were employed and population was 146 million. Employed increase for this period, 70 percent; population, 10 percent.

In 1933 for each 100 people employed there was a total population of 322, but in 1944 for each 100 employed there was a total population of only 211. In 1933 one working person supported three people; in 1944 one working person supported only two people. Had the income per worker in 1933 been the same as in 1944 the per capita income in 1933 would have been only two-thirds of what it was in 1941.

The low ratio of people employed to total population in 1933 was due to much unemployment in 1933 and to high birth rates in the decade of 1920-29. The high ratio of employed to total population in 1944 was due to an unusually large number of women and formerly retired men working in 1944, and to the low birth rate of 1931 to 1940. Because of the relatively large number of children under 10 years of age at the present time it is not likely that the ratio of employed to total population can, in the near future, reach 1:2 as it was in 1944; the ratio is estimated for 1955 to be only 1:2.4, and it may reach 1:1.7 by 1960 even with full employment. It is believed that a high birth rate will prevail for some time. The ratio of child population to employed population is likely to increase until 1960. By 1960 some of War II babies will begin to be productive. But, if recent population increases continue it will require 20 years after 1960 for a favorable ratio to be established. An examination of the population by age groups will serve to point up the problem. In 1950 there were 16,324,000 children under 5 years of age and in 1940 only 10,541,524. But in 1950 there were only 10,732,000 people between the ages of 15 and 19 but in 1940, 12,233,523. In 1950 there were 55 percent more children under 5 years of age than in 1940 but there were 13 percent fewer 15 to 19 year old people in 1950 than in 1940. The efficiency of the employed is increasing at the rate of 2 percent per year which, if it were not for the increase in income taxes would result in an increase in real income of 2 percent per year. The per capita income, because of the large number of children and increase in income taxes may actually decrease over the next few years.

If actual dollar incomes are converted to dollars of constant value and then made into an index number, the income for the employed and the per capita income can be accurately shown. It will be observed that the per capita income of the employed varied from 87 to 121 over a period of 20 years. But the per capita income which is influenced by the percent of the total population employed varies greatly. For the same 20 years it varied from 72 to 144. It is believed the

(Continued on page 18)

# Robinson Stresses Need Of Greater Advertising

— By —
W. F. ROBINSON
CHAIRMAN FLORIDA CITRUS COMMISSION, CAMP McQUARRIE, AUGUST 31, 1951

**(Continued From Last Issue.)**

Some years ago there was a lot of loose talk around the industry about growing cannery grade fruit and saving money by not using all the sprays, dustings and fertilizers which good grove experience had taught us should be used in manufacturing the best quality citrus. This propaganda came from the single strength industry which at that time thought it had a strangle-hold on the growers of citrus.

I believe we must protect ourselves by being ready to sell either to the fresh houses or to the processing houses, wherever we can find the best deal. I urge you to grow good fruit. Don't sell it too cheaply. Don't sell your groves too cheaply.

After a careful look around, I say with confidence that there are no signs on the business or citrus horizon which today justify the singing of the blues which has become so loud, so general and so popular in our industry recently.

I see good times and fair prices ahead for the coming season.

My optimism is not based on hope alone. I believe it is supported by facts and figures with which I have become intimately acquainted since working with the money you are spending for advertising. I am optimistic about prices for next season because:

(1) The consumers of the nation are buying the huge pack we processed last year. If the current rate of sales continues, and there is no reason to believe it will fall off, we will have on December 1st less than 10 million cases of processed citrus of all types in the warehouses of the nation. This is only 2 to 2-½ million cases more than was available last December 1st and I am confident we have enough new customers using citrus products to clear out these goods in a short time. Citrus products have been moving at a three million case a month clip for some time now. This is the highest rate of sales in history.

(2) Texas is out of the citrus picture. I do not see how you can eliminate better than 20 million boxes of citrus from the markets of the nation without feeling a beneficial effect in the areas of production remaining.

(3) We have the largest advertising agency in the world working diligently on the most comprehensive advertising program in the history of our industry. We are using 38 television stations serving an audience of 9 million, 17 spot television stations, The Saturday Evening Post and Life magazines, every other week, with about twelve million readers, and 105 daily newspapers covering 54 markets.

### Chain Stores Help

We are getting wonderful cooperation from the large chain stores and independent retailers of the nation in moving our largest pack of processed citrus.

Your Florida Citrus Commission did not wait until December and the new crop was on us to recognize that we had a tremendous sales problem. Your Commission moved into action when the first signs early this Summer indicated the huge pack would take an extra sales effort to move out of the way before next season's crop was ready to sell.

In all fairness, I tell you that your advertising agency, the J. Walter Thompson Company, through its Florida representative, Mr. Forshew, first realized what it would take to sell this giant pack before it became an overpack. He warned your Commission that all concerned would have to get busy or we would be in trouble.

Your Commission scraped up what extra money it could find, borrowed from its reserves and called upon the Thompson Agency for all its know-how and brains.

The advertising steam-roller we put into operation started to click almost immediately.

### Retail Sales Up

Sales of single strength orange juice for the first week in August were 86% better than they were the corresponding week a year previous. Sales of grapefruit juice for the same week were 77% better than for the corresponding week the previous year.

Sales of blend were 20% better than the corresponding week the year previous. And sales of fresh frozen orange concentrate were 53% better than they were the same week a year before.

I must admit that prices had a great deal to do with increasing sales. All along the line citrus products were selling for less money than they were a year ago. In so far as single strength products are concerned the prices were at salvage levels. The only hopeful thing about this situation, it seems to me, is that at cheap prices we are finding thousands and thousands of new customers for Florida citrus. These new users will continue to be our customers so long as our prices remain close to what the buying public is willing to pay. When we raise prices too high our markets dry up.

### Stable Prices

The question of stable prices for processed citrus goods is an important one. A large veteran Polk County citrus operator recently appeared before the Citrus Commission and urged that something be done to stabilize canned prices. He told us that wholesale handlers of citrus goods were keeping their inventories small so that they would not be penalized if Florida cut prices further. He urged that the processing industry in Florida do something to assure wholesalers that purchases made one week would not cost them money because we cut prices further the next week.

Supplies held by wholesalers all over the nation as of June 30th were extremely small. There were only enough goods in all procery lines to take care of 45.3 days of selling at the June rate. There were less than 30 days of citrus products in wholesalers' hands.

Back in 1946, the last time we had serious trouble with a citrus overpack, it was the wholesalers of the nation who took the giant's share of the losses. They were long on citrus at high prices and

when the plug was pulled they lost millions.

These good businessmen have long memories. When the pack grew huge this time they kept their inventory positions short. If there are losses suffered by anyone from this large pack it will be Florida canners and Florida growers, not the wholesale buyers of our products.

Our advertising agency has made a study of this problem. They point us to us that whereas canned single strength orange juice, for instance, has dropped better than ten cents a can at the retail level, from 1950 to 1951, cold cereal, another agricultural product, has not changed in price even a fraction of a cent for several years.

**Must Protect Customers**

We must begin to think of protecting our customers price-wise. When some semblance of stabilization has been reached then and then only the big chains and independents of the nation can begin to buy what Florida has to sell in quantity and with confidence.

While we are talking about stabilizing prices of our products let us also think for a minute about stabilizing in the minds of our customers the fine name we have to sell.

**Benefit of Code**

We passed the Quality Citrus Code back in 1949. Its benefits have spelled profits for two seasons now. These benefits may be enhanced only if we make the buying public realize that **Florida** citrus products are quality citrus products. We cannot do this by being bashful about our goods.

With the aggressive Chairman of the Commission's Advertising Committee, Mr. C. C. Minton, I strongly feel that Floridia has been missing a bet in not insisting that the word "Florida" be used on all fresh and processed citrus products.

We grow the finest fruit in the world here and certainly we should not be ashamed of telling our customers that the fruit we ship comes from Florida.

It would not be difficult or expensive to stamp the word "Florida" on all U. S. No. 1s run through the fresh houses and to include in big letters the word "Florida" on all labels for canned and concentrated citrus.

I will admit that this suggestion of Mr. Minton's probably is as close to a master brand as Florida will ever get but even this would be helpful in tying our advertising expenditures to our production and our quality. I hope the Commission, the industry and the Florida Legislature will do something about bringing Mr. Minton's suggestion to pass.

There is no one year limit to the prospects for prosperity in the citrus industry, if we Florida citrus farmers use our good sense and good judgment about our pricing, spending and planning.

The millions of new money which has been invested in the concentrate industry did not come down to Florida on impulse. It was invested by veteran capitalists after careful studies of the potentials for making money out of Florida citrus.

Concentrators packed about 45% more of their fast selling product this past season than they did the season previous. It is selling at a rate of about 60% better than it was during 1950. It is bringing prices, despite all the weeping and wailing you hear, which justify paying growers $1.50 on the bush for oranges.

Only 18½% of all consumers in the United States bought frozen orange concentrate in June of this year. They bought only .06 ounces per day.

**New Customers**

To me these figures mean that better than 80% of the nation's food buyers are possible new customers for concentrate. They further mean that if we sell an additional .06 ounces of juice per day to our present customers we will sell another 1,750,000 gallons of juice per month. We haven't scratched the surface yet. I believe confidently that concentrators will next year again increase the size of their pack.

They will increase their pack because the sales potential figures put before them is still cirtually untapped. They will increase because by so doing they will make their invested dollars earn more profit dollars for them.

In June only 9% of all the families buying groceries in the United States bought orange juice; only 7.6% bought grapefruit juice; and 2.8% bought blend.

To again para-phrase what our hard-working and intelligent advertising man, Mr. Forshew, has told us, I would like to recall that he has pointed out—that all the citrus grown in the United States would squeeze out to only 1.44 ounces of juice per person daily. It is not hard to see that if we could sell just 2 ounces of citrus juices to each person in the United States daily we would need another approximately 65 million boxes of fruit.

In both the frozen and the single strength lines of Florida processed citrus there are great opportunities for expanding our market and for persuading present users to increase their consumption. Although I believe the use of single strength juices will decline gradually as distribution of frozen juices improves, they always will be some demand for the old style lines.

**In Beverage Business**

The citrus industry now is in the beverage business. This is a business most far-sighted Florida citrus men have dreamed about for many years. They have felt it was the natural field for our citrus products and that it was the field in which we could make the greatest margin of profits.

I agree with them.

Florida concentrate helped us get into the beverage field painlessly. Now we have a product which tastes like orange and is orange juice. We have a product the public likes to drink.

The potential sales in our new business are limitless, in my opinion. This means we have no problem of over-production. Our only problems are distribution and sales. These problems must be handled by more and more **forceful** advertising through every possible media.

**Vending Machines**

Recently there has been agitation for your Florida Citrus Commission to invest your money in financing vending machines.

Already Clinton Industries (Snow Crop) have 10,000 vending machines in use all over the nation. Minute Maid has some vending machines spotted around the country, as have Snively Groves and others. Should the Florida Citrus Commission go into competition with these enterprising concerns? Personally I didn't think so, and the Commission went along with me in deciding to stay within our concept of the functions of the Florida Citrus Commission as written into the laws of Florida.

Your Commission studied the various financing problems carefully. We studied the legal aspects of

using your funds to finance vending machines. It was the conclusion of our attorneys and the Commission that such an investment of your money would be illegal.

Down through the years the citrus industry has grown and prospered under the free enterprise system. Rugged individualism has characterized our most successful growers and processors. When the plan for financing vending machines was broached, I was mindful of this heritage of the industry and reluctant to have your money used in a field I thought properly belonged to private concerns within the industry.

The Commission named a committee to study a number of vending machines in the hope of finding an ideal one to recommend to the industry. This committee has purchased some types of machines and will buy and test others.

When the results are obtained we will hand them to the Florida Citrus Mutual so that organization may be guided toward a decision as to whether or not it should use your money to finance a wide-scale investment into vending machines. No state laws control Mutual, your grower members can tell your organization what you want when the decision is made on vending machines.

We are in the beverage business, I repeat. Today our entry into this field means unlimited horizons for Florida products.

**Citrus "Ades" Opposed**

There are those who believe that citrus ade beverages will develop a tremendous market for our products. They may be right. Personally, however, I view these ade drinks with considerable misgiving. I do not like the idea of selling a product which contains an extremely small amount of citrus juice as a citrus drink.

Some years ago the manufacturers of woolen cloth were faced with a similar problem in competing with the manufacturers of cotton goods. They went to the Congress and had laws passed which forced cotton goods manufacturers to plainly label on their products the amount of wool and the amount of cotton in the cloth used for their manufactured products. These labels today may be found on dresses, suits and other such products.

I believe it would be a wise move on the part of the citrus industry to ask the Congress to pass similar laws to protect our industry. If such laws were passed, citrus ade manufacturers using extremely small amounts of real citrus juice in their products would hesitate to advertise them as orange juice drinks. As a matter of fact, I believe it would be possible and legal for us to include in such legislation requirements stiff enough to prevent these ade makers from advertising as citrus drinks anything which contained less than a specified percentage of real citrus juices.

**Stress Research Work**

Our entry into the beverage field emphasizes the necessity for our continuing to stress the research work which some years ago gave us the fresh frozen orange concentrate manufacturing discover. This research may develop a form of making a citrus product which tastes as good as frozen concentrate and does not have to be frozen nor kept under refrigeration. If such a discovery is made then certainly we will be in competition with the coca-cola and other soft drink dispensers who do not have to keep their products at sub-freezing temperatures.

A few years ago fresh frozen orange concentrate was just an idea. A few years from now fresh frozen orange concentrate may be as out-moded as last year's women's dresses because some smart research man has come up with a method even more revolutionary.

The citrus revolution, which I have discussed, seems to me a transition which will lead to even greater prosperity for our industry. It is a period of transition such as agriculture has encountered in many lands and in many ages since time began.

It will be a critical period, particularly for the small grower, but those of us who have the courage and the ingenuity and who work hard enough at our business will survive these trying times to an era of greater prosperity.

Certainly your Citrus Commission will continue to exert its utmost efforts toward helping you manufacture profits from your citrus groves.

## MINUTE MAID ANNOUNCES NEW CITRUS PROGRAM

A plan to help stabilize citrus prices which, in effect, takes some Florida growers into a 50-50 partnership with Minute Maid, pioneer processor of concentrate, has been announced by John M. Fox, president of the company.

The plan, which is called the Minute Maid-Grower Participation Plan, guarantees the grower his cost of production and a profit on his oranges. In addition, at the end of the company's fiscal year, net revenues are divided and the grower receives an additional amount in proportion to the amount of fruit he has supplied. The effect of the plan is to give the participating grower a 50-50 stake in Minute Maid, without his having to make any investment in plants or equipment.

All growers are invited to participate on a first come—first served basis, according to Fox, who said his company's groves would sign up under the same terms. However, the company reserved the right not to put the plain in effect unless 2,000,000 boxes were obtained, not counting Minute Maid's own groves' contribution.

An interesting feature of the plan is that participating growers will also get first call on the company's additional requirements for fruit at the market price.

Rather than base the pricing on a per box basis which would tend to penalize growers of high yield fruit, the plan institutes a new and more equitable method for paying growers, according to Fox. This will be on a per pound of solids basis, and Minute Maid guarantees 11 cents per pound for solids plus 40 cents for pick and haul. Later, when revenues are divided proportionately, the same per pound of solids basis will be used. (Industry average last year was 5.5 pounds of solids per box.) Florida State Inspection officials, who determine the solids contents of each load when delivered, have approved the Minute Maid plan and will develop highly accurate measuring methods to assure each grower the proper determination of amount of solids present in his fruit.

The company may limit participation under this plan to 50 percent of the fruit processed by the company during the first year, it was stated. The participating growers will share in all the revenue of Minute Maid, not only on orange juice but also on all products of the company, such as cattle feed, molasses, grape juice, pineapple juice, etc.

# Can Florida Growers Afford To Use Uncertified Nursery Stock?

**While his name did not appear on the original program of "Symposium on Certification of Disease-Free Nursery Stock" at the Citrus Growers Institute at Camp McQuarrie, Mr. Zack Savage, Associate Agricultural Economist at the Agricultural Experiment Stations, was asked to prepare a paper on the Economic phase of the problem. His paper, presented herewith, acts as a follow-up of those previously published in this magazine and should be read and considered in connection with those appearing on the regular program.—Editor.**

— By —
ZACH SAVAGE
ASSOCIATE AGRICULTURAL ECONOMIST, AGRI. EXP. STATION

One of the outstanding inefficiencies in annual crops is not obtaining and maintaining an adequate stand of plants until harvest time. The same is true for tree or perennial crops but with additional complications. Perennial plants are often used that have inherent or other reasons that cause yields to be consistently low under ideal growing conditions. In the case of annuals, new seed or plants may be used the following season that are disease free of improved and high yielding strains. The replacement of perennial plants with better strains is not such a simple matter.

In the case of citrus, 7 to 10 years from time of setting trees in the grove are required for growing and developing the trees into substantial yields of fruit. If the tree fails to produce fruit for any reason, or if it yields one-half the normal, and replacement is made at 10 years of age, another 10 years will be necessary to develop the new plant. Thus 10 years of production is lost while growing the new tree.

It is highly important to use buds from proven strains as to variety, thriftiness, hardiness, and high yields that are disease free. Yields from poor strains are lower than the normal but would not require extra care and expense. However, trees having psorosis and similar diseases would require extra care and expense until taken out, and would yield less than the normal. Modern mechanical methods of grove care are approximately the same per acre for a poor stand as a full stand which reduces the net returns by increased unit costs. Poor trees and vacancies also reduce the net returns by a reduced yield of fruit.

**Some examples**

In the case of a full stand of 70 trees per acre of a bearing capacity of 8 boxes of fruit per tree and fruit at $1.00 on the tree, the gross income would be $560. With operating expenses of $200 per acre, the net would be $360. With 10 percent vacancies or nonbearing trees the income would be $504. The operating expenses would be about the same, or $200, leaving a net of $304, 16 percent less than with a full stand. With fruit at 50c on the tree the net in the two cases would be $80 and $52, respectively, or a reduction of 35 percent with 10 percent vacancies. Thus, a full stand of full bearing trees becomes increasingly important with decreasing fruit prices. Also, since operating costs must be taken care of before there is any net returns, any reduction in gross income due to poor trees or vacancies is reflected in net returns by the same amount as the reduction in gross income.

In some cases there are trees that look perfectly healthy but yield little or no fruit. Other cases are found where some trees are diseased and yield sparingly. Diseases such as porosis that are preventable through the use of disease free budwood foregoes this reduction or loss in yield. With 70 trees per acre and 14 trees yielding at 50 percent capacity, the loss is the same as if there were 7 vacancies, and the net returns would be the same provided there were no extra expenses in caring for the low yielding trees.

The worst feature of diseased low yielding trees is that most trees do not maintain their low yields with additional seasons but the yields decline until the trees die. Then there is the expense of removing the old trees, replacing with new trees, and bringing the new trees into full production. In the case of setting an acre of 70 trees with 20 percent of them developing psorosis or another similar disease that prevents fruit production, at the end of 10 years the other 56 trees would be producing about 2.8 boxes of mixed citrus per tree or 156 boxes per acre. With normal trees the yield should be 195 boxes per acre, or 25 percent more than with 20 percent of the trees diseased and not bearing. This difference of 39 boxes per acre at 10 years of age would decrease the net returns by $57 with fruit at $1.45 per box (the 1943-51 average price for all citrus).

If at the end of 8 years from setting the 14 diseased trees are replaced by healthy trees, the bearing trees would have to carry the resets for at least 5 additional years or until their own fruit would pay for their keep and development. Under these conditions at the end of 15 seasons, the 56 trees 15 years of age and the 14 trees 7 years of age would net for that year $209 above operating cost. If all 70 trees were healthy the net per acre for the 15th season would be $255, or 12 percent more for the one season. The cumulative net under the two conditions would be $1,005 and $1,519, respectively, at the end of the 15th season, or 51 percent more with all healthy trees and none having to be replaced. Also, the prospects would be for the 70 trees of the same age to yield 11 percent more fruit during the 5-year period they were increasing from 15 to 20 years of age than the other group, and net 11 percent more money during this period.

**Added cost for certified nursery stock**

Some nurserymen believe they could produce certified nursery stock that would be relatively free from psorosis and similar diseases at an added cost of $1.00 per tree. This would mean an added cost of $70 per acre of 70 trees. This additional cost could be paid by 49 boxes of fruit at $1.45 per box. This amount of money would be

lost in one season on a 12 year old grove having 20 percent of the trees diseased to the point of not bearing. At the end of 12 seasons with normal healthy trees the cumulative returns above operating cost would amount to $787 per acre. During the same period with 80 percent normal trees and the 20 percent of diseased nonbearing trees replaced with normal nursery stock at the end of the 8th season, the cumulative returns above operating cost would be $419 per acre at the end of the 12th season for the older trees. The replacements would be 4 years of age at this time. The net would be 88 percent more on the 70 normal trees. The $70 extra cost for certified trees could be paid by this group and still net 71 percent more than the other group.

Under the same conditions the certified or normal trees would pay the extra cost for nursery stock and net 44 percent more money at the end of the first 15 seasons, or 27 percent more at the end of 20 seasons. This would amount to $612 per acre more for normal trees at the end of 20 seasons than the other acre with one replacement of 20 percent of the trees at the end of 8 seasons. In actual practice there might be several replacements at intervals of 2 to 5 seasons totaling more than 20 percent of the original setting. In such conditions the difference would be even more favorable to the use of certified nursery stock.

# Annual Thermometer Testing

**By Warren O. Johnson,**
**Meteorologist**

The fall season is at hand, and soon it will be time for all growers to have their thermometers tested. Early in November Field Meteorologists, of the Federal-State Frost Warning Service will post dates and places at which you may leave your thermometers to be tested.

One of the essential items in connection with crop protection from low temperatures is an adequate supply of good thermometers. Nowdays, most grove thermometers are good thermometers, but sometimes temporary defects occur in the instruments which makes them, for the time being, unreliable.

Some of these temporary defects are: separations in the fluid column in the thermometer tube, some of the fluid has entered the overflow section and will not come down, or there is an air bubble in the thermometer bulb. Sometimes none of these defects are present yet the thermometer reading is too low. Usually this latter is because some of the colored fluid has been distilled and then collected in the top of the tube as a clear substance which blends so closely with the clear glass tube that it is very hard to detect. Frequently this is not noticed in an examination of the instrument but will be detected when the thermometer is tested.

Again, the thermometer may be all right but one cannot be sure because the graduations have worn off or have become so faint that it is impossible to tell just what the temperature reading is. If the graduation scale is so impaired that one cannot read the temperature the thermometer is useless until the scale is reblacked.

All of these temporary defects are remedied during the thermometer testing operations conducted annually by the Federal-State Frost Warning Service. They cannot, however, repair a thermometer if the glass tube is broken or cracked.

The owners of the thermometers can do much to expedite the testing operations if a few instructions are followed, such as:

1: Thermometers should be removed from individual thermometer boxes, bundles, or paper wrappings.

2: Have a tag securely fastened to each thermometer, on the end opposite the bulb. Each thermometer is tested separately and the correction for that particular thermometer is marked on the tag attached to that separate instrument.

3: Fasten a tag to each thermometer by means of a strong string. Do not have string too long as they might become entangled in the testing tanks and then be torn off.

4: Use special tags. Calling cards or pieces of blotters, are not acceptable as they are too flimsy and are easily torn, or washed off.

5: Grower's name, should be clearly marked on each tag. A rubber stamp, or a soft pencil, is suitable for marking tags.

6: Growers should make it a point to have their thermometers at their testing place not later than the date specified for their district.

## CHECK ELECTRIC WIRING AND HELP PREVENT FIRES

A thorough check of electric wiring systems on the farm and in the home at least twice a year will help to eliminate fires and insure more efficiency from the current used, say farm electrification specialists.

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# Some Facts About Irrigation . . .

By Richard R. Frisbie

Irrigation is an ancient practice. Egypt, Mesopotamia, India and China were and are extensively irrigated, however, irrigation is a comparatively new function to Florida and probably one of the least understood of all agricultural practices.

The grower who contemplates the installation of an irrigation system should consider the fact that a system which does not allow an adequate flow of water for the texture of the soil on which the grove is planted, and at frequent intervals, is a poor initial investment and will do very little toward increasing production.

Many growers have found it advisable to observe successful systems installed in groves of like size, before selecting the system which will meet their needs.

Reliable irrigation technicians can, of course, be of great service to the grower in selecting the proper size pipe, pumps, etc., to use in his particular operations.

Properly safeguarded, irrigation does reduce the gamble of agriculture as far as water supply is concerned. Rainfall need no longer make or break a crop.

The annual rainfall in Florida is ample for the development of citrus if our heavy rainfalls were divided into a large number of equal portions and these distributed at intervals as needed. Citrus trees would certainly never suffer from a lack of moisture, but frequently the total rainfall for a month is precipitated in a few hours, most of it drains off, and the full benefit is not secured from it, thus do the groves suffer to a great extent and are benefitted by an additional supply provided by irrigation.

**Transpiration in Citrus Trees**

Citrus trees require more water than deciduous trees of equal size and age, for transpiration is greatly reduced in the winter season or dormant period in such trees as peaches, plums and pears. The leaf-area of citrus trees use the same winter and summer and much water is required by them in winter dormant season and still larger quantities in the period of more active growth in summer.

Citrus trees are more or less active all the time, and transpiration goes on to a greater or less degree during the entire year.

It is useless to attempt the cultivation of citrus fruits where an adequate supply of water cannot be secured, either as rainfall or by irrigation. When an inadequate water supply is available, the trees do not make normal growth, the leaves curl and drop, the young fruit falls and fruit brought to maturity is often deficient in juice and inferior in quality.

The object of irrigation is of

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course, to maintain a desirable supply of soil moisture in the soil mass occupied by the root systems of the citrus trees, in order to produce a large yield.

How much water is needed to irrigate a citrus grove? Qualified research personnel agree in general that about two-acre-inches of water at one application is about all that can be profitably applied.

Growers can make better use of irrigation water if they understand how the water is used by citrus trees, the effect of seasonal weather conditions and the differences in soils that make it necessary to use different irrigation practices in different groves to maintain a satisfactory supply of available soil moisture.

The amount of water extracted from the soil by roots of citrus trees and used in the trees or lost by transpiration from the leaves can be measured.

If the amount so used in an orchard from month to month is recorded and compared with the maximum temperatures for the same period, it will be seen that transpiration use of water follows closely the lines that represent maximum temperatures and evaporation from a free water surface.

Growers should realize that coarse-textured soils require more frequent irrigation than fine-textured soils, since they lose more water by percolation below the root zone. Water penetrates slowly t rough soils having compact subsoils, and percolation losses are less. Penetration, however, may be so slow that water may be lost as run-off.

On such soils loss of the more fertile topsoil will be greater than on the more porous soils. In medium textured soils having deep uniform profiles, trees usually root deeper, and the proper irrigation is much easier.

**Water Deficits**

How well does a given schedule fit the need of any particular grove? To answer that question it is necessary to determine the water deficits that are developed in the trees. The deficits may be ascertained readily from the fruit measurements. A regular series of early-morning measurements will show how the fruit and the trees are responding to the available moisture supply. If the rate of fruit growth decreases materially before each irrigation and rises after irrigation, positive evidence is obtained of water deficits occurring under current irrigation practices.

Measurements must be made in the early morning, because daily shrinkage may be measureable within 2 hours after sunrise. Select two fruits on the north or west side of a tree, away from the early morning sun. Smooth green fruit at about eye level or lower can be more accurately measured than rough irregular fruits.

The measurements should be recorded in tabular form for comparison with measurement made on the preceeding day so that an intelligent irrigation system may be worked out.


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# High Protein Citrus Pulps

R. H. MAURER(1), G. W. OTEY(2), W. O. ADAMS(2), AND E. M. BURDICK(1), FROM TEXSUN CITRUS EXCHANGE LABORATORY

Methods of improving the protein content of dehydrated citrus pulp have been under investigation by this laboratory for some time. As a result, it is now possible to produce a "synthetic protein" in citrus pulps by a very simple and economical process using fertilizer grade anhydrous ammonia. Thus one of the cheapest forms of combined nitrogen is converted into a form that can substitute for one of the most expensive forms. It is quite well known that certain non-protein nitrogenous compounds such as asparagin, ammonium acetate, ammonium bicarbonate, and urea can be uitlized by ruminants to supply at least a large part of their protein nitrogen (2, 5). Microorganisms of the rumen are able to convert these simple nitrogenous materials into amino acids and thence into proteins, which later become available to the animal. The exact nature of the "synthetic protein" produced by the ammoniation process is not known, but tests have shown that such added nitrogen is in a stable form and is available to cattle as a source of protein. Millar (3, 4) has likewise shown that ammoniated sugar beet pulps and corn silages can serve as protein substitutes for ruminants.

### High Pressure Not Needed

Probably the most interesting and pertinent fact regarding the new methods of ammoniating citrus pulp is that contrary to previous methods of ammoniation no high pressures are necessary. Atmospheric pressure and moderate temperatures are sufficient to cause large amounts of anhydrous ammonia to react rapidly with citrus pulps. The nitrogen content of a citrus pulp can be increased by 5 or 6% by such a simple process; this means a crude protein content equivalent to about 40% can be obtained (1). Control of the ammoniation process is quite simple so that it is possible to produce a feedstuff that is balanced with regard to the nitrogen content, if not to the essential amino acids. This later problem has also been under investigation by this laboratory.

### Old Methods Ineffective

The methods commonly used to manufacture dehydrated citrus pulps do little or nothing toward chemically improving the nutritional value of the raw material, while this new ammoniation process increases the crude protein from its original 6% to as much as 40%. Pulps containing 16-18% crude protein are readily made by simply treating dehydrated citrus pulps with anhydrous ammonia under controlled conditions. Each pound of anhydrous ammonia reacting forms the equivalent of 5.15 pounds of "synthetic protein" or crude protein. Each pound of urea, a compound extensively used as a ruminant feedstuff and made by treating ammonia with carbondioxide, is equivalent to only 2.62 pounds of crude protein. Yet urea costs about twice as much as anhydrous ammonia. This new "synthetic protein" is available to cattle for the production of beef as will be shown later.

At least a part of the anhydrous ammonia combines with the pectic substances, such as galacturonic and polygalacturonic acids, to form amides. This alone will not account for the large amount of nitrogenous materials formed and additional possibilities must be considered. The ester linkages present in the pectic substances might well be attacked to form simple salts of ammonium. Such acids as citric and acetic which are known to be present probably combine with ammonia. Some of the hydroxyl groups of the pectic substances and simple sugars may even react with anhydrous ammonia. Cellulose and glucose are known to ammoniate with difficulty, thus it is unlikely that they combine with ammonia under the conditions used to ammoniate citrus pulps. Almost all of the added nitrogen is in a water soluble form.

### Semi-Pilot Plant

A semi-pilot plant capable of handling 100 pound batches was used to produce several tons of ammoniated citrus pulp. A continuous pilot plant is now under construction. The ammoniation reaction produces heat and gives the citrus pulp a yellowish-golden color. After "deammoniation" to remove all traces of uncombined ammonia a golden colored somewhat friable material results. Many types of citrus pulps have been ammoniated such as grapefruit, orange, lemon drained, pressed, molasses added, meals, cyclone fines, etc., and all give essentially the same results.

The feeding tests reported herein were conducted at the Rio Farms Livestock Demonstration Farm. Ten head of good grade Hereford steers were used for the experiment; five were fed an "ammoniated citrus pulp ration" and five were fed a control "grain-cottonseed meal ration". These calves had been on an oat pasture for approximately fifty days and were in good condition, their weights ranged from 375 to 475 pounds. Preliminary to the feeding test a twenty-one day period was utilized for getting the steers on full feed. Throughout the test period the calves received their full ration of concentrate in the evening and their hay in the morning. Fresh water and mineralized loose salt were available at all times.

### Gains Shown

Table 1 shows the feeding sched-

TABLE 1
UTILIZATION OF AMMONIATED CITRUS PULP BY GROWING CALVES

| Period Days | Wt. of Ration fed in lbs. | Av. Gain per calf in lbs. | Pounds of Feed to make 1 lb .Beef during period | Accumulative Av. |
|---|---|---|---|---|
| AMMONIATED CITRUS PULP RATION: | | | | |
| 14 | 175 | 31 | 5.65 | 5.65 |
| 14 | 224 | 31 | 7.23 | 6.44 |
| 14 | 224 | 28 | 8.00 | 6.92 |
| 14 | 245 | 34 | 7.21 | 7.00 |
| 14 | 245 | 25 | 9.80 | 7.47 |
| CONTROL GRAIN-COTTONSEED MEAL RATION: | | | | |
| 14 | 217 | 35 | 6.20 | 6.20 |
| 14 | 217 | 27 | 8.04 | 7.00 |
| 14 | 248.5 | 29 | 8.55 | 7.49 |
| 14 | 266 | 39 | 6.82 | 7.30 |
| 14 | 266 | 32 | 8.32 | 7.49 |

ule, average gain, and pounds of feed needed to produce one pound of beef for each 14 day period as well as the accumlative average. Table 2 lists the amounts of the various ingredients used in the formulation of the two rations fed these animals. Table 3 lists the chemical composition of both the ammoniated citrus pulp ration and the control grain-cottonseed ration. From this it is seen that there is little or no difference in the two rations from a strictly chemical point of view, although no protein was supplied the ammoniated citrus ration by the 41% cottonseed meal. It will be noted that this is the main difference in the two rations. An analysis of the type of protein in the two rations is given in Table 4, from which it is seen that over 41% of the crude protein of the ammoniated citrus pulp ration was supplied by the ammoniated citrus pulp containing 16.5% crude protein.

Although the ammoniated citrus pulp with its high "synthetic protein" content supplied 41% of the total crude protein received by the calves, they were able to utilize it for the production of beef just as efficiently as the native proteins supplied by the grain-cottonseed meal ration. Thus over the ten week period it was necessary to feed 7.47 pounds of the ammoniated citrus pulp ration to produce 1 pound of beef; while 7.49 pounds or practically the same amount of grain-cottonseed meal ration was necessary for the same results. It is believed that the inclusion of certain essential amino acids, some of which are present only in limited quantities in citrus, will greatly enhance the nutritional value of these feedstuffs. The carcasses of all animals graded out as good or better.

These results briefly indicate the interesting economic possibilities now available to the citrus industry in being able to produce not only a high carbohydrate feedstuff, but also a high protein feedstuff suitable for cattle. This is especially important since adequate supplies of proteins are not ordinarily produced in citrus growing areas.


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**Note on superscripts on page 1:**
(1) Maurer and Burdick—Texsun Citrus Exchange, Weslaco, Texas
(2) Otey and Adams—Rio Farms, Inc., Edcouch, Texas

## ROOT ROT ON WOODY PLANTS IN SOUTHEAST SUBJECT OF REPORT

Clitocybe (cly tos' i bee), a kind of mushroom root rot disease of fruit, forest, shade, and ornamental trees, shrubs, and vines, is discussed in a new U. S. Department of Agriculture publication, Circular No. 853. A copy may be obtained from the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

This root rot disease not only attacks a wide variety of woody plants, including tung, but also covers much territory . . . the whole southeastern area from Texas to the District of Columbia and Florida, the only State in which it has been studied extensively. It was first observed in Oklahoma 50 years ago. The studies were carried on in Florida by research men of the Department's Division of Forest Pathology in cooperation with state authorities.

**TABLE 2**
**FORMULATION OF THE RATIONS**

| | Ammoniated Citrus Pulp Ration | Control Grain-Cottonseed Meal Ration |
|---|---|---|
| Red Top Cane | 22.7% | 32.8% |
| Corn & Cob, ground | 19.0% | 23.5% |
| Milo, ground | 27.2% | 36.6% |
| Cottonseed Meal (41% protein) | 0.0% | 7.1% |
| Ammoniated Citrus (16.5% protein) | 31.1% | 0.0% |

**TABLE 3**
**CHEMICAL COMPOSITION OF THE RATIONS FED**

| | Ammoniated Citrus Pulp Ration | Cottonseed Meal-Grain Ration |
|---|---|---|
| Crude Protein (N X 6.25) | 13.15% | 12.88% |
| Nitrogen-Free-Extract | 65.13% | 68.25% |
| Crude Fat | 2.85% | 3.29% |
| Crude Fiber | 5.94% | 3.25% |
| Mineral | 2.99% | 2.71% |
| Moisture | 9.94% | 9.62% |
| | 100.0% | 100.0% |

**TABLE 4**
**SOURCE OF PROTEINS IN RATIONS**

| | Ammoniated Citrus Pulp Ration | Cottonseed Meal-Grain Ration |
|---|---|---|
| Red Top Cane | 18.1% | 26.9% |
| Corn & Cob, ground | 11.5% | 13.6% |
| Milo | 29.3% | 36.6% |
| Cottonseed Meal (41% protein) | 0.0% | 22.9% |
| Ammon. Citrus Pulp (16.5%) | 41.1% | 0.0% |
| | 100.0% | 100.0% |

# Ralph Henry Named Citrus Commission Advertising Director

At a regular meeting of the Florida Citrus Commission today, Mr. Ralph M. Henry, former Merchandising Director, was named Advertising Manager for the Commission. In his new capacity, Mr. Henry will direct the placing of $2,000,000 in various advertising media each season.

In the years prior to his coming with the Florida Citrus Commission, Mr. Henry worked for the Goodyear Tire and Rubber Company and the Ohio Fuel Gas Company, both in sales capacities. He also had a partnership in a Ford dealership in New Lexington, Ohio.

Employed by the Commission in April of 1942, Mr. Henry worked in the succeeding years in the Cleveland, Ohio, Cincinnati, Ohio, Philadelphia, Pa., and New York City areas. In 1945, he was transferred to Philadelphia again as Sales Supervisor of the entire merchandising staff. Later, in August of 1948, he was made Director of the Merchandising Division with headquarters in Lakeland, Florida. In the intervening years, up to his appointment as Advertising Manager, Mr. Henry hired and trained practically every man on the now existing Florida Citrus Commission merchandising staff.

Considered an expert on citrus marketing problems, Mr. Henry will have as his first task the directing of a program designed to move what is expected to be another bumper citrus production of Florida during the 1951-52 season.

# Mulching Experiments On Young Citrus Trees

— By —
WILLIAM H. GIBB, JR.,
AT CAMP McQUARRIE
AUG. 15, 1951

Before going into the discussion of the mulching of young citrus trees, perhaps I should explain what prompted me to devote my time to this subject.

A few years back when I first started in the citrus business, I did a great deal of hoeing of young trees. I soon found that the more I hoed the more I disliked it and, therefore, after a period of time when I had graduated to more advanced and constructive types of citrus work, I still rebelled at the thought of hoeing even though by this time I wasn't on the end of the hoe myself. I found myself getting tired just watching someone else doing it. As the result, I decided to investigate the possibilities of a mulch to eliminate this type of labor.

Admittedly, the practice of mulching young trees is not new. Weeds, grass, leaves, etc. have been used for years for weed and moisture control. However, because of the cost of cutting, gathering and placing these materials, plus the fact they decomposed in a relatively short time thereby losing their effectiveness, I decided that some other types of mulching materials should be investigated.

In choosing a material, there were several factors that had to be considered: mainly, weed control, moisture retention in the soil, temperature control, as well as cost and availability. After some investigation, I decided on the following materials: sawdust, aluminum foil, 15 lb. builders' felt, brick, fiber glass, and ordinary fertilizer bags. Some of these materials were known to be impracticable, such as the bricks, but were used merely to determine variations between the different materials. I would like to say at this time that several of these materials, possibly all, have been tried at one time or other as mulches. However, it was my idea to get relative data on them all, which would only be done by placing them side by side in one common plot where the elements would affect one and all the same.

In May, 1950, the experiment was set up on some young trees that had been set out in February of the same year. There were nine (9) different types of mulches in triplicate, plus one conventionally hoed check and one unhoed check also in triplicate. This gave eleven (11) variations in triplicate to work on. While I will go over each of these individually, I would like to say at this time that from May, 1950, until the present time the unhoed trees required seven (7) waterings, the conventionally hoed trees four (4), and the mulched only two (2) regardless of the material used. The determining factor in watering was when the trees showed signs of wilt.

**1. Fiber Glass**

This material was thought to be the most promising at the start of the tests because of its insulating qualities and ability to let rain and fertilizer through. Also, due to the fact it was glass, it would not decompose. Strangely enough, it was found to be most unsatisfactory for the following reasons:

1. Weeds grew right through it.
2. Any disturbance, such as the stream from a water wagon, caused it to disintegrate.
3. Cost of material was very high.

**2. Aluminum Foil**

Because of the cost of this material (about 15c for a piece 3'x3') and its poor insulating qualities, I cannot recommend its use at the present time. It is very effective in controlling the weeds and holds together fairly well, but these factors do not warrant its use.

**3. Brick**

It was not only impracticable,

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**Throughout the entire citrus belt of Florida there are a great many growers who have found from experience that Florida Favorite Fertilizer Brands of Fertilizer give them invariably fine results in producing fine fruit . . . you, too, may profit in the same manner.**

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Florida Favorite FERTILIZER, INC.

Old Tampa Road Lakeland, Florida

but it failed in every way in obtaining the results we were seeking.

**4. Sawdust**

From the standpoint of retaining moisture, this was found to be very effective following a very heavy rain. However, this advantage was offset by the fact that the tree received little or no moisture following a light rain due to the four inch (4") layer of sawdust completely absorbing what little moisture that did fall. In addition, the weeds found their way through necessitating pulling them up by hand. Also, it was found necessary to double the application of fertilizer to keep the trees in balance with the rest of the grove.

**5. Sawdust plus Aluminum Foil**

Same results as listed in No. 2 and No. 4.

**6. Fertilizer Bags**

These were found to be very effective in every way with the exception of durability. They were found to stand up for three (3) to four (4) months at which time they were fairly well decomposed. For the grower who has a sufficient source of supply and the willingness to replace them, I feel these bags are a very effective means of obtaining weed and moisture control.

**7. Check (no hoeing)**

These checks were very inferior in growth due to the rank weed growth around the trees. Also, they required seven (7) waterings against (2) two for the mulched trees. I am satisfied in my own mind that had they had only the same amount of water as the mulched trees, they would have died.

**8. Check (conventionally hoed)**

These required four (4) waterings and were equal in growth to the mulched trees. However, many hoeings were required to keep the trees free of weeds.

9. 15 lb. roofing paper

10. 15 lb. roofing paper, painted aluminum.

11. 15 lb. roofing paper, covered with 1/8" of soil.

Number nine (No. 9) listed above was extremely satisfactory with the exception of the fact that being black it absorbed the sun's rays causing the soil temperature readings to go up to 96.6 degrees during the hot part of the day. We then tried No. 10, listed above, by painting the top surface of the paper with aluminum paint. This accomplished our objective bringing the temperature down to 92 degrees. In order to eliminate the painting operation, No. 11 was tried with a sprinkling of sand on top of the paper. This brought the temperature down to 91.8 degrees. Fortunately, this last operation is performed by the wind and rain and it is not advisable to do anything other than lay the paper. As a matter of fact, care should be taken to prevent too heavy a layer of sand forming on top of the paper as this hastens the decay.

Listed below are the advantages of this mulching material:

1. Being waterproof, it holds the moisture in the soil.

2. Controls the weeds by smothering.

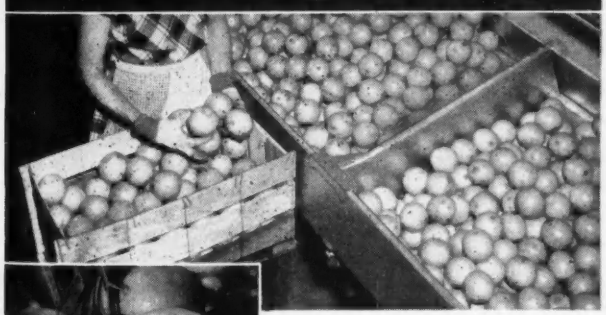
3. A piece 3' x 3' retails at six (6) to seven (7) cents. If bought in quantity, the price would no doubt be reduced.

4. Lasts about one (1) year from present observation.

5. Insulates against excessive heat.

This is the material I would recommend over any of the others


Key to Larger Yields



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at the present time. However, attention should be called to a mulching paper being manufactured for the control of moisture, weeds, and temperature in growing pineapples in the Hawaiian Islands. This paper is somewhat comparable to the 15 lb roofing paper but would cost only two (2) cents for a piece 3' x 3'. At present, they are not manufacturing it for domestic use, but it is entirely possible they would if the demand warranted it. At present, I am investigating other sources for this same material.

It is important to note that after placing this material that 20 to 25 holes be punched with an ice pick to allow water and fertilizer to enter. This has been found to be highly effective and any larger holes tend to allow weeds to come through. Also, it is advisable to maintain a small cup around the tree to make certain the water and fertilizer keep within the range of the root system. This was found comparatively simple. The paper should be cut in 3' lengths and slit from any outside edge to the center where a cut is made slightly larger than the diameter of the tree. This can be done at the barn on a table making it much easier than at the grove.

While the results of these tests seem to indicate that a mulch is desirable, there is still much to be done in obtaining more scientific data. Practically all the results obtained so far have been based on observation only.

Fortunately, through the cooperation of Dr. Smith and Dr. Hammon of the University of Florida, steps have been taken to set up moisture recording machinery on the experiment. Also, we hope to get more definite temperature readings at the same time. We also plan to study the bacterial action beneath the various mulches and look into the rate at which the fertilizer becomes available to the soil. It is thought that possibly a more uniform feeding is brought about due to the prevention of leeching after heavy rains.

Until we know more about these facts, I hesitate in suggesting spending money on the mulching of any large scale plantings. However, for the grower who has resets throughout his regular grove, I feel that he cannot afford not to mulch. We all know how hard it is to take care of resets and how they suffer from lack of attention. Also, I think it would be practical to try it on a small acreage or a portion of a large acreage so the grower could determine for himself the advisibility of using it on a large scale.

In closing, I would like to say that in my opinion, without a shadow of doubt, the moisture content of the soil around a young tree is in direct relation to the weed control; and while using a mulch does not necessarily mean you will never have to water, you can much more readily bridge the gap between rains of sufficient quantities to take care of the needs of the tree.

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## TRENDS IN THE SUPPLY AND DEMAND OF CITRUS

(Continued from Page 6)

income per person employed will increase about 8 percent by 1955 but the per capita income may not change from present levels. Should unemployment develop per capita income would decrease but real income (constant dollars) per employed person would probably rise.

**The Effect of Per Capita Supply and Per Capita Income on Prices**

During the past 18 years the major variation in the price of Florida oranges (in terms of constant dollars (1926) ) has been due to the variation in the United States per capita supply of all oranges and the United States per capita income (in terms of constant dollars (1926) ). For the period 1933 to 1950 when United States per capita income was held constant at $780, a change in the United States per capita supply of oranges of 2.2 pounds, there was an inverse change in price of approximately 13 cents per box. During this period when real per capita income (1926 dollars) changed by $50, price per box for Florida oranges changed 20 cents per box.

It is quite evident that during the next few years there will be a considerable increase in population growth. Enough to absorb at least 1 3/4 million boxes of additional oranges each year. Because of prospects for higher income taxes and higher percent of the total population under 15 years of age it is not likely that the per capita income will allow for additional oranges.

**Demand for Different Citrus Products**

The expansion of the market through new uses cannot be accurately foreseen. Frozen concentrate has made inroads on the consumption of fresh oranges and canned juice, but at this time research has not determined the degree that this has taken place.

Only a few years ago grapefruit juice was king of citrus juices. Recent demand studies in the Jacksonville market reveal that at the same price (15 cents per No. 2 can) stores in the low income areas sold 3½ cans of orange juice to 2 cans of grapefruit juice, and in the high income areas 1½ cans of orange juice was sold to one can of grapefruit juice. Blended juice, which at one time far outsold orange juice, is of less importance today. At slightly lower prices only 1 can of blended juice was sold to 4 cans of orange juice in the low income areas and in the high income areas only 1 can of blended juice was sold to 3½ cans of orange juice.

Two new products, orange concentrate and orangeade are of great importance. In the low income areas orangeade outsold any other juice except orange juice. At prices of about two-thirds of orange juice 2 cans of orangeade were sold for 3 cans of orange juice. In the high income area, at slightly higher prices for orange concentrate than for orange juice, 2 times as much concentrate was sold as orange juice. Orange concentrate sales in the low income areas amounted to less than one-fourth of the orange juice sales and less than one-third of the orangeade sales. The high income area orangeade sales amounted to less than one-sixth of the concentrate sales and less than one-fourth of the orange juice sales.

**New Plantings**

Whatever the demand is producers can go a long way in adjusting supplies to increased demand. This adjustment comes about through additional planting and better care of groves. In general, plantings are much higher in years following high prices. For the 11 years in which orange prices were above $1.15 per box, averaging $1.87 per box, plantings following the years of high prices averaged 673,000 trees. For the 11 years of low prices, averaging $0.81 per box, plantings following the years of low prices averaged 461,000 trees. On the average

(Continued on Page 22)

# Inspection Of Processed Fruits and Vegetables at Record High

A record volume of canned, frozen, and dried fruits and vegetables were inspected for quality and condition during the year ended June 30, 1951, the U. S. Department of Agriculture announced recently.

The service, supervised by the Fruit and Vegetable Branch of the Production and Marketing Administration, inspected over 150 million cases of canned fruits and vegetables; over a million cases of canned marine products; nearly a billion pounds of frozen foods; over a hundred million pounds of dried and dehydrated products, and 83 million pounds of other processed products, such as honey and peanut butter.

In addition to doing work for the commercial trade, inspection was furnished for Federal school lunch purchases, dried fruits and honey diversions, and Government purchase and export programs. Also, inspections were made for California to assist that State in determining compliance with the State Date Marketing order, and all processed citrus products in Florida were inspected to assist that State in determining compliance with the Florida Citrus Code of 1949.

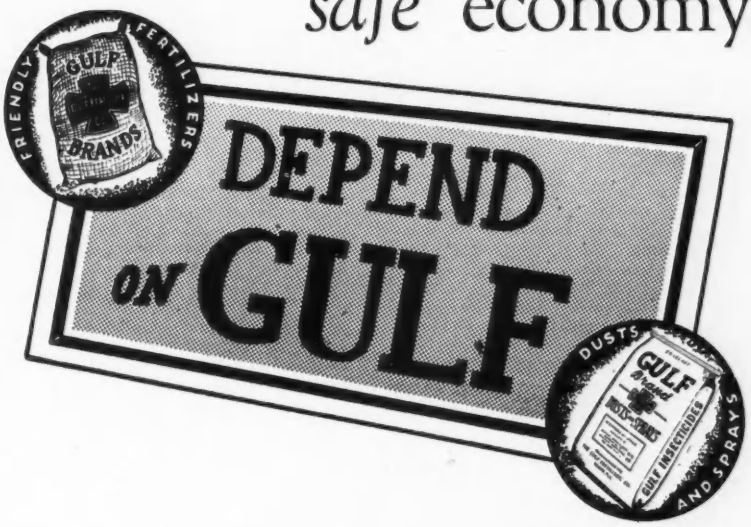
One hundred and thirty-four fruit and vegetable processing plants owned by 104 companies were approved to pack under continuous Federal inspection as of June 30, 1951. Under this type of operation the inspections of canned fruits and vegetables and frozen fruits and vegetables increased 10% and 45% respectively over the previous year. The increased inspections were due to the increased number of plants approved to pack under this service and to an increase in production by plants already operating under continuous inspection.

Fees payable to the Service from inspections totaled $1,739,000 and slightly exceeded the cost of inspection personnel.

The standardization and inspection service, which began in 1931, has expanded rapidly during the past 13 years. The service, entirely

(Continued on Page 22)


To produce more *quality* fruit with *safe* economy




• **The grower who adopts a program of grove care keyed to production of the maximum quantity of QUALITY fruit his trees will bear, is always in a favored position when it's time to market his crop. DEPEND ON GULF for complete service to help you grow better fruit with SAFE economy. The GULF Field Man in your section will be glad to recommend ways and means — ask him to inspect your grove now.**

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# The LYONIZER

Department

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## Reports Of Our Field Men . . .

### WEST CENTRAL FLORIDA
**V. E. Bourland**

Most all the packing houses are ready for work, but very little fruit being picked on account of not passing the test. Fruit is running small generally in most all varieties.

Some groves have been infested with grasshoppers, and growers have had to spray with chlorodine which did a good job of eradicating them. Most of the groves are looking good and have a good crop, growers as a whole have done an excellent job of keeping fruit bright, however, a lot of scale damage has shown up in the last thirty days. Most of the growers are feeling very optimistic with the prospects.

### SOUTH POLK, HIGHLANDS, HARDEE AND DE SOTO COUNTIES
**C. R. Wingfield**

There has been much activity in the shipment of grapefruit and in the past few days Hamlin oranges have begun to move. The growers have been rather slow to sell due to the low offers. Fruit continues to size well, however, with the heavy load on early varieties we will have a lot of small sizes.

The moisture condition is still fairly good due to local showers. In the low sections, the water from the storm rains, has gone down but the continued showers have prevented some vegetable plantings. But in the citrus areas we are in good condition.

### POLK COUNTY
**J. T. Griffiths and J. K. Enzor, Jr.**

The first two weeks in October have produced temperatures which were cooler than normal and during that interval there has been a number of days with high winds and low humidity. During the same period there have been short intervals where the weather was cloudy with small amounts of rain. Probably as a result of this weather condition, a blemish has appeared on both Duncan and Marsh Seedless grapefruit in groves extending from as far North as Haines City to as far South as Avon Park. This blemish is basically a pitting between the oil cells which takes on a pinkish coloration. On occasions these areas are blackened. The cause of this condition is unknown, but it will result in severe grade-out in many groves. It has been impossible to find any relationship between this condition and general grove practice. Fertilization and cultivation definitely are not a factor in the formation of this blemish. Whether or not it will continue to get worse remains to be determined.

### WEST CENTRAL FLORIDA
**J. E. Mickler**

This past month marked the first shipments of citrus of the season, though it was a slow start. This is the time of the season that all growers seem to take in the same spirit as the underdog football team before kickoff. They have heard all the pessimistic reports, have read all accounts of their chances, and now stand all aquiver before the ball starts rolling. Despite all pessimistic belief, they, like the under dog, fight harder, and in the main wind up with a better season than expected. The only real blemish showing in fruit at present seems to be sunburn. More of that condition has appeared than in recent years.

### SOUTHWEST FLORIDA
**Eaves Allison**

The flooding rains of the first of October did heavy damage in this area to vegetable crops. Ranging from a fall of 7 inches at Ruskin to 12 inches at Fort Myers and Immokalee, the rain damage to crops was in proportion to the lay of the land and the amount of water falling. Many fields in the Ruskin-Palmetto section escaped serious damage. However most such tender crops as beans and squash were lost everywhere, with the time limit too late to replant before frost hazard. Many farmers are replanting their damaged acreage to tomatoes, which are more cold resistant and therefore offer a better gamble at this time.

Citrus groves in the Manatee-Sarasota area received more benefit than damage from the rain as some of them had been 'scanted' on moisture during the Summer. Some fruit has now (Oct. 10th.) started to split from the sudden excess of rain. In the Fort Myers area many groves had already been severely damaged with much tree loss from the heavy Summer rains previous to the hurricane.

### PINELLAS COUNTY
**T. D. Watson**

Conditions in Hillsborough and Pinellas counties are very good except for a little lack of moisture.

There has been some grapefruit moving in Pinellas county but not very heavy shipments as yet. Sizes of grapefruit are somewhat smaller than usual but a large crop generally speaking has held down the size.

Everyone is getting ready for their Fall application of fertilizer somewhat earlier than usual. It seems that better results are realized in cases where top-dressers haven't been used.

There is quite a bit of scale throughout my territory and most growers are using parathion and some are using a late oil emulsion spray where there is a heavy infestation.

As usual at this time of year more people are dusting for rust mites than are spraying and in most cases getting good results.

### PASCO AND EAST HILLSBOROUGH COUNTIES
**E. A. McCartney**

It is beginning to get a little dry again in my territory and crops that have no irrigation are in need of rain. There is a good crop of fruit throughout my territory. Only scattered places are light on different varieties, but generally there is more fruit than we had last season.

The topic of conversation is still prices. I wish I could answer all the questions I have been asked about what the prices will be for this year's fruit, but the growers seem to be confirmed optimists and are going ahead regardless of the uncertainity of prices. The season is starting out good although prices of this date are all auction prices with very little f.o.b. fruit. Packing houses and canneries are just now getting ready for this season.

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## *Uncle Bill Says:*

Politics is beginnin' to warm up in Florida and throughout the nation . . . but, don't get all het up fer fear we're goin' to tell you who to vote fer . . . we've lived fer quite a spell and while they's a lot of things we don't know we have learned one thing, and that is not to git involved in a argument with another guy about his family, his religion, or his politics . . . that is unless you're looking fer a fight.

Don't git me wrong . . . I'm not one of these guys who spends all his time straddlin' the fence on political issues . . .our preferences fer candidates fer public office are jest as strong as anybody's . . . but this here column is presumed to deal mostly with the problems of Florida Growers . . . so we'll let the regular newspaper folks handle the political situation.

They's a heap of difference between politics and citrus and vegetable growin' . . . the politician can make the wildest kind of promises and after election he often fergits right quick, but the feller who is selling fertilizers can't misrepresent what goes into the fertilizers he sells to help feed the trees and the crops . . . the Lyons Fertilizer Company has too much integrity to try any such foolishness, besides which every bag of fertilizer sold in this state is required by law to carry a tag showin' jest what ingredients is in the fertilizer.

Unlike some politicians this Company has made it an unvaryin' policy to live up to every promise it makes . . . and it's this recognized reliability plus the fact that our fertilizers contain only the finest ingredients that has been responsible fer the tremendous growth of our annual sales volume over the many years this outfit has been doin' business with Florida Growers.

They's a lot of growers who has been buyin' our fertilizers ever since we started in business and seem to be all set to go right on with that mighty good habit . . . must be a powerful good reason fer such consistent patronage.

## TRENDS IN THE SUPPLY AND DEMAND OF CITRUS

(Continued from Page 18)

plantings were 50 percent greater in the years following high prices than in the years following low prices.

In 11 of the 22 years grapefruit sold for less than 65 cents per box, averaging 44 cents per box, and plantings following the years of low prices averaged 128,000 trees. In 11 of the 22 years grapefruit sold for more than 65 cents per box, averaging $1.11 per box, and plantings following the years of high prices averaged 217,000 trees. In the years following high prices plantings were 70 percent greater than plantings following low prices.

Should new uses be found for citrus products or new products developed which would cause a big increase in demand, growers would increase planting and care of grove. If this failed to bring forth enough fruit to match the increase in demand grove values would increase to the point that new owners would find it difficult to make good returns on investment although growers now in the business might be making large returns on original investments.

## INSPECTION OF PROCESSED FRUITS AND VEGETABLES AT RECORD HIGH

(Continued from Page 19)

optional with industry, maintained 33 offices during the year.

The development of new standards and the revision of existing standards were continued, and Federal, State, county and city institutions were aided in formulating specifications in connection with purchases of processed products.

The U. S. standards for grades of processed fruits and vegetables now total 103, including 70 for canned foods, 9 for dried, and 24 for frozen fruits and vegetables. New standards were issued for two commodities and 10 standards were revised. Data were collected and analyzed and preliminary drafts were prepared during the year for standards on canned beets, pears, concentrated orange juice, frozen apples, asparagus, cauliflower, dried apples, prunes, and raisins.

Federal specifications were developed during the year for 27 canned and frozen commodities. These specifications, which are used by the Defense Department and other government agencies, cover type of processing, packaging, marketings, and other factors in addition to U. S. standards for quality.

## SELLING FARM SCRAP IS FINE MANAGEMENT, HELPS MOBILIZATION

Gainesville, Fla. — Rounding up farm scrap and selling it is good farm management as well as helpful in the essential production of new steel, says W. B. Anderson, chairman of the Florida Agricultural Mobilization Committee.

Cash return from selling scrap is better than no return at all when farm machinery or equipment rusts away, the chairman asserts. Prices now being paid for scrap are higher than those offered during world War II.

Mr. Anderson emphasizes that the fall season is a good time of year to check all machnery and equipment on the farm to determine what repairs are needed and what items should be scrapped and replaced. The search for farm scrap is thus part of getting farm production tools ready for another planting season.

Now is the time to harvest scrap metals from Florida farms.

Seventeen of Florida's finest rural youth will represent the state at the National 4-H Club Congress in Chicago November 25-29, according to an announcement by Woodrow W. Brown and Miss Lorene Stevens, club specialists with the Florida Agricultural Extension Service.

Lake County now ranks second in the state in total citrus acreage, according to R. E. Norris, county agent. The county's acreage now stands at 67,000, with slightly over 20,000 not yet in production. Citrus scale insects and fruit splitting are particularly bad around Tavares this year, the agent says, probably due to the dry summer.

It is estmated that Florida bees are now producing annually more than 15 million pounds of honey.

All pest control materials should be treated as potential poisons and used accordinng to manufacturer's directions.

## *Classified Ads*

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# CITRUS INDUSTRY BUYER'S GUIDE

Grouped together on this page are the advertisements of several Florida business concerns who are reputable suppliers of commodities of interest and value to all factors of the great Citrus Industry of this State. Check these advertisements closely for supplies of which you may be in need . . .


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*Tampa, Florida*

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